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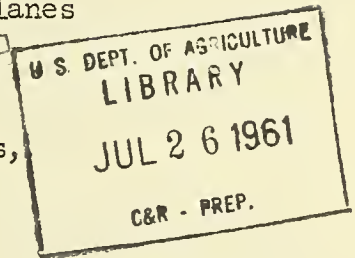
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UNITED STATES DEPARTMENT OF AGRICULTURE
24.5 Agricultural Research Service,
Plant Pest Control Division
Washington 25, D. C.

3
X Summary of Results of Inspection
Of Commercial Passenger and Cargo Planes
For Adult Japanese Beetles
1960

Compiled in Regulatory Operations,
Plant Pest Control Division



In the summers of 1958 and 1959 special inspections at the point of destination were made by personnel of the Plant Pest Control Division to determine the hazard of spread of adult Japanese beetles by means of common carriers including airplanes.

In 1958, 400 planes were inspected of which 1 percent were found to harbor adult Japanese beetles at destination while in 1959, 851 planes were inspected and again 1 percent were found infested. All these planes had piston engines.

In 1960 the situation was quite different due to the fact that after the close of the inspection work in 1959, the use of jet passenger planes had been established. In 1960, for some reason as yet unexplained, substantially more Japanese beetles were found on jet planes than on piston engine planes.

Upon the appearance of unusual numbers of Japanese beetles at the Baltimore, Maryland, and Philadelphia, Pennsylvania, airports about June 20, 1960, the application of foliage sprays to the field environs was promptly begun. The use of DDT aerosol sprays in the passenger compartments, and both aerosol and residual sprays in the cargo compartments of all departing planes was inaugurated. On July 8, because of developing populations of Japanese beetles, the Teterboro Airport, Teterboro, New Jersey, and the National Aviation Facilities Experiment Station, Pomona, New Jersey, were also declared hazardous in relation to the spread of beetles.

With the exception of these four situations and some few military, county or municipal airports, no other Japanese beetle populations developed to an extent that warranted placing additional airports in a status requiring treatment of planes departing therefrom. Insecticide foliage applications were made, however, at certain fields as a precautionary measure including the airports at New York City and Newark, New Jersey.

The research agency inaugurated tests in 1960 to determine the efficacy of the plane treatments being used and made certain recommendations leading to changes in the spray operational procedure. Adult Japanese beetles in screen cages were placed in passenger compartments of planes departing from Baltimore to Los Angeles and were submitted to the regular aerosol application. Cages of beetles in the cargo compartments received treatments simulating the residual insecticide and aerosol spray. These caged beetles made the scheduled flight to Los Angeles where they were removed from the plane, and the longevity and mortality determined by a cooperating state agency. It was found that all the beetles which were not dead upon arrival died within a five-day period whereas beetles in check tests held at Baltimore did not begin dying until after a ten-day period. These tests were replicated.

Altogether 4,658 planes were inspected, 1,266 (27 percent) of which were jets; 1,105 (24 percent) were jet props; and 2,287 (49 percent) were piston engine planes. A total of 717 Japanese beetles were removed from 332 (7 percent) of these planes at destination. Twelve percent of the jet planes and 7 percent of the jet prop planes were infested whereas only 1.4 percent of the piston engine planes were infested.

On the West Coast 1,456 planes were inspected with 189 planes (13 percent) found infested; in the Central Region 1,108 planes were inspected with 66 planes (6 percent) found infested; and in the Southern Region 1,883 planes were inspected with 77 planes (4 percent) found infested.

On the basis of the total number of 4,685 planes inspected, the 186 jets infested represented 3.99 percent of the total planes that were inspected; the 79 jet props infested represented 1.69 percent of the total planes inspected; and the 67 piston engine planes infested represented 1.44 percent of the total planes inspected.

Of the total 717 beetles found, 47 percent were on planes originating from Baltimore, 17 percent from Philadelphia, 26 percent from New York, and 10 percent from other locations. It is not believed that the beetles found on planes from New York and "other locations" originated at these locations but that they were beetles picked up through stops made by these planes at Baltimore and Philadelphia. These stops could have been intermediate stops made at these points or the beetles could have boarded the planes on previous days when these planes originated as flights from Baltimore or Philadelphia. In other words, the beetles were "carry overs."

The following tables present detailed data including the number of planes inspected, the number of beetles found, and the number of planes infested. These data are summarized according to the Plant Pest Control Region of destination, the point of origin, and the type of plane involved.

R. A. Roberts
11/3/60

Table No. 1
 Type Planes Inspected For Japanese Beetles
 On West Coast of U.S. 1960
 Showing Number and Percent of Planes Infested by Type

Western Region West Coast	Type Planes Inspected							
	JET		JET-PROP		PISTON ENGINE		TOTALS	
	Number Planes	Percent Infest- ed	Number Planes	Percent Infest- ed	Number Planes	Percent Infest- ed	Number Planes	Percent Infest- ed
Number of Planes With Beetles	184	18.04 %	0	0 %	5*	1.27 %	189***	13 %
Number of Planes Without Beetles	836		41		390		1,267	
TOTALS	1,020		41		395**		1,456	
Percent by Type Of Planes Inspected	70 %		3 %		27 %		100 %	

* 2 of these were cargo planes

** 68 of these were cargo planes

*** Average number of beetles per infested plane: 2.8
 (Maximum number for a plane was 28, of which 17 were living, 11 dead)

Table No. 2
 Japanese Beetles Found In Inspection
 Of Commercial Passenger and Cargo Planes
 Arriving On West Coast From Eastern U.S. 1960

Western Region West Coast	Japanese Beetles Found							
	Passenger Compartment		Cargo Compartment		Location Not Shown		Totals	
	Number of Beetles	Percent Living or Dead	Number of Beetles	Percent Living or Dead	Number of Beetles	Percent Living or Dead	Number of Beetles	Percent Living or Dead
Living Beetles	124	40 %	66	29 %	32	71 %	222	41 %
Dead Beetles	138	53 %	163	71 %	13	29 %	314	59 %
TOTALS	262		229		45		536	
Percent Beetles By Location	49 %		43 %		8 %		100 %	

Table No. 3
 Type Planes Inspected For Japanese Beetles
 In Southern Region 1960
 Showing Number and Percent of Planes Infested By Type

Southern Region	Type Planes Inspected							
	JET		JET-PROP		PISTON ENGINE		TOTALS	
	Number Planes	Percent Infest- ed	Number Planes	Percent Infest- ed	Number Planes	Percent Infest- ed	Number Planes	Percent Infest- ed
Number of Planes With Beetles	1	0.5 %	37	5 %	39	4 %	77*	4 %
Number of Planes Without Beetles	205	99.5 %	641	95 %	960	96 %	1,806	96 %
TOTALS	206		678		999		1,883	
Percent by Type Of Planes Inspected	11 %		36 %		53 %		100 %	

* Average number of beetles per infested plane: 1.3
 (Maximum number for a plane was 9, of which 8 were living, 1 dead)

Table No. 4
Japanese Beetles Found In Inspection
Of Commercial Passenger and Cargo Planes
Southern PPC Region 1960

Southern Region	Japanese Beetles Found							
	Passenger Compartment		Cargo Compartment		Location Not Shown		Totals	
	Number of Beetles	Percent Living or Dead	Number of Beetles	Percent Living or Dead	Number of Beetles	Percent Living or Dead	Number of Beetles	Percent Living or Dead
Living Beetles	15	29 %	17	33 %	0	0 %	32	31 %
Dead Beetles	37	71 %	34	67 %	0	0 %	71	68 %
TOTALS	52		51		0		103	
Percent Beetles By Location	50 %		50 %		0 %		100 %	

Table No. 5
Type Planes Inspected For Japanese Beetles
In Central Region 1960
Showing Number and Percent of Planes Infested by Type

Central Region	Type Planes Inspected							
	JET		JET-PROP		PISTON ENGINE		TOTALS	
	Number Planes	Percent Infest- ed	Number Planes	Percent Infest- ed	Number Planes	Percent Infest- ed	Number Planes	Percent Infest- ed
Number of Planes With Beetles	1	3 %	42	11 %	23*	3 %	66***	6 %
Number of Planes Without Beetles	31	37 %	344	89 %	667	97 %	1,042	94 %
TOTALS	32		386		690**		1,108	
Percent by Type Of Planes Inspected	3 %		35 %		62 %		100 %	

* 2 of these were cargo planes

** 36 of these were cargo planes

*** Average number of beetles per infested plane: 1.2
(Maximum number for a plane was 3, of which 2 were living, 1 dead)

Table No. 6
Japanese Beetles Found In Inspection
Of Commercial Passenger and Cargo Planes
Central PPC Region 1960

Central Region	Japanese Beetles Found							
	Passenger Compartment		Cargo Compartment		Location Not Shown		Totals	
	Number of Beetles	Percent Living or Dead	Number of Beetles	Percent Living or Dead	Number of Beetles	Percent Living or Dead	Number of Beetles	Percent Living or Dead
Living Beetles	14	31 %	9	27 %	0	0 %	23	29 %
Dead Beetles	31	69 %	24	73 %	0	0 %	55	71%
TOTALS	45		33		0		78	
Percent Beetles By Location	58 %		42 %		0 %		100 %	

Table No. 7
Commercial Passenger and Cargo Planes
Inspected for Japanese Beetles 1960
Showing Number and Type Plane Infested

	Type Plane Inspected											
	JET			JET-PROP			PISTON ENGINE			TOTAL		
	Number Planes	Number Infest- ed	Percent Infest- ed	Number Planes	Number Infest- ed	Percent Infest- ed	Number Planes	Number Infest- ed	Percent Infest- ed	Number Planes	Number Infest- ed	Percent Infest- ed
Central Region	32	1	3.1 %	386	42	10.9 %	690	23	3.3 %	1,108	66	6 %
Southern Region	206	1	0.5 %	678	37	5.5 %	999	39	3.9 %	1,883	77	4 %
Western Region West Coast	1,020	184	18.0 %	41	0	0.0 %	395	5	1.3 %	1,456	189	13 %
Western Region Ariz.-Colo.	8	0	0.0 %	0	0	0.0 %	203	0	0.0 %	211	0	0 %
TOTALS	1,266	186	11.9 %	1,105	79	7.2 %	2,287	67*	1.4 %	4,658**	332	7 %
Percent By Type Of Planes Inspected	27 %			24 %			49 %			100 %		

* Of which 4 were cargo planes

** Of which 104 were cargo planes (3.8 % infested)

(The Percent of Infestation figure is based on the number of that type plane inspected in the Region.)



Table No. 8
 Japanese Beetles Found in Inspection
 Of Commercial Passenger and Cargo Planes 1960
 Showing Location of Beetles in the Plane

	Japanese Beetles Found				
	Passenger Compartment	Cargo Compartment	Location Not Shown	Total	
				Number	Percent
Central Region	45	33	0	78	11 %
Southern Region	52	51	0	103	14 %
Western Region	262	229	45	536	75 %
Total	359	313	45	717	100 %
Percent By Location	50 %	44 %	6 %	100 %	

Table No. 9
Commercial Passenger and Cargo Planes
Inspected For Japanese Beetles 1960
Showing Percent Each Type Plane Found Infested at Destination

	Type Plane Inspected							
	JET		JET-PROP		PISTON ENGINE		TOTAL	
	Number Infested	Percent Infested	Number Infested	Percent Infested	Number Infested	Percent Infested	Number Infested	Percent Infested
Central Region	1	0.02 %	42	0.90 %	23	0.49 %	66	1.42 %
Southern Region	1	0.02 %	37	0.79 %	39	0.84 %	77	1.65 %
Western Region West Coast	18 $\frac{1}{4}$	3.95 %	0	0.00 %	5	0.11 %	189	4.06 %
Western Region Ariz.-Colo.	0	0.00 %	0	0.00 %	0	0.00 %	0	0.00 %
TOTALS	186	3.99 %	79	1.69 %	67	1.44 %	332	7.13 %

Percent Infestation figures based on the total number of planes inspected all Regions: 4,658

Table No. 10
1960 Record of Japanese Beetle Inspection at Destination
Of Two Planes Both Departing Baltimore at Noon

Flight No. 77
American Airlines
B 707
Lv. Baltimore - 12 Noon
Ar. Los Angeles - 2:10 p.m.

Flight No. 845
United Airlines - DC 8
Lv. Baltimore - 12 Noon
Ar. Chicago - 12:45 p.m.*
Ar. San Francisco - 3:35 p.m.

Inspection at Los Angeles

Inspection at San Francisco

	Alive	Dead	Total		Alive	Dead	Total
June 23	1	0	1				
June 28	15	2	17				
June 29	2	0	2				
June 30	2	2	4	2	0	2	
July 1	0	1	1				
July 2	6	1	7				
July 3	17	11	28	2	8	10	
July 4	3	3	6	6	1	7	
July 5	0	6	6	1	7	8	
July 6	7	3	10	8	3	11	
July 7	11	3	14	4	4	8	
July 8	3	2	5	3	3	6	
July 9	7	13	20	0	3	3	
July 10	3	8	11	0	1	1	
July 11	0	2	2	0	1	1	
July 12	1	4	5	6	5	13	
July 13	16	5	21	3	8	11	
July 14	1	1	2	0	1	1	
July 15	0	1	1	2	6	8	
July 16	2	0	2	1	0	1	
July 17	1	1	2	0	2	2	
July 18	0	1	1				
July 19				0	1	1	
July 20	0	2	2	1	1	2	
July 21	1	0	1				
July 22	1	0	1				
July 23	0	1	1	0	1	1	
July 31				0	1	1	
Aug. 2				0	1	1	
Total	100	73	173	41	58	99	
Average							
Number							
Per Plane	3.8	2.8	6.6	1.9	2.8	4.7	

Number of inspections of AAL Flight No. 77 was 26.

Number of inspections of UAL Flight No. 845 was 21.

*Inspected at Chicago on July 19, 20, 21, 22, 26, 28 and 29. One living beetle found on July 19. No other living or dead beetles found at Chicago.

Table No. 11
Distribution of Japanese Beetles According to Point of Origin
Inspection of Commercial Passenger and Cargo Planes 1960

Point Of Plane Origin	ALIVE		DEAD		TOTAL	
	Number	Percent Alive	Number	Percent Dead	Number	Percent From Each Point Of Origin
Baltimore	170	50 %	171	50 %	341	47 %
Philadelphia	47	38 %	76	62 %	123	17 %
New York	38	21 %	146	79 %	184	26 %
Other Locations	22	32 %	47	68 %	69	10 %
TOTALS	277	39 %	440	61 %	717	100 %

